Pressure Injury Current Awareness Service

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Methods

Data collection periods 1 and 3, we used a polyvinyl foam barrier dressing as a preventive intervention against nasal skin damage; specifically, we placed a precut barrier on one side of the barrier foam has an adhesive surface, which was placed against the prongs Study period 2 differed; during this period neonates were treated with the nasal cannula without the foam barrier based on manufacturer experience suggesting the foam barrier is not needed for prevention of skin damage Pressure injuries (PIs) that occurred during each study period were staged according to National Pressure Ulcer Advisory Panel definitions: Results: Eighty neonates were evaluated during study period 1 (thin-walled nasal cannula plus foam barrier) We evaluated 27 neonates during period 2 (thin-walled nasal cannula and no foam barrier) and 128 were evaluated during study period 3 (thin-walled nasal cannula plus foam barrier) Six neonates (7%) developed PIs during period 1, and 2 (15%) developed during study period 3 All were stage 1 and 2 PIs, no full-thickness injuries, also referred to as columella necrosis developed during use of the thin-walled nasal cannula in combination with the foam barrier dressings In contrast, 13 PIs (48%) of neonates managed during data collection period 2 (thin-walled nasal cannula with no foam barrier) developed PI, and 40% experienced stage 3 PI or columella necrosis This difference reflects a 6-fold increase in nasal injury occurred when nasal continuous positive airway pressure (NCPAP) was administered without use of the protective barrier dressing; Conclusion: We found clinically relevant difference in the occurrences of nasal PI in neonates managed with NCPAP; occurrences of stage 3 PI were 6-fold higher when a thin-walled cannula was used without a protective foam barrier dressing;
In addition to pressure itself, microclimate factors are gaining more attention in the understanding of the development of pressure ulcers. While there are already various products to reduce pressure on sore-prone areas to prevent pressure ulcers, there are only a few mattresses/hospital beds that actively influence skin microclimate. In this study, we investigated if microclimate management capable mattresses/hospital beds can influence skin hydration and skin redness/erythema. We included 25 healthy subjects in our study. Measurements were made using Courage & Khazaka Multi Probe Adapter MPA with Corneometer CM825 and Mexameter MX18 to determine skin hydration of the stratum corneum and skin redness/erythema before and after the subjects were lying in conventional (Viskolastic® Plus, Wulff Med Tec GmbH, Fedderingen, Germany and Duo™ 2 mattress, Hill-Rom GmbH Essen, Germany) or microclimate management capable mattresses/hospital beds.
management capable mattresses/hospital beds (ClinActiv + MCM™ and PEARLS AFT, Hill-Rom GmbH Essen, Germany) While there was no difference in skin redness/erythema on the different mattresses/hospital beds, skin hydration of the stratum corneum decreased significantly in an air fluidized bed compared to baseline values and values measured on standard mattress/Viskostlastic® Plus Air-fluidized therapy reduces skin hydration and therefore could contribute to prevent moisture associated ulcers Changes in skin hydration as one important factor of skin microclimate can be detected after a short time of incubation and even before an erythema appears

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The use of support surfaces is one of the most common interventions for preventing pressure ulcers These support surfaces can include mattresses, chairs, cushions, foot/heel protection and offloading (removing pressure from the affected area) devices Nurses need to understand their impact on skin integrity, associated risk factors and how to select the correct equipment for a patient's needs This article, the fourth in an eight-part series on the development of a core education curriculum for pressure ulcer prevention and management, discusses surface selection and use

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Fletcher, J (2020) "Pressure ulcer education 5: keeping patients moving" Nursing Times 116(2): 22-24

Patients who are immobile are at highest risk of developing pressure ulcers Ensuring regular movement or using repositioning redistributes pressure and helps prevent pressure damage This article, the fifth in an eight-part series on the development of a core education curriculum for pressure ulcer prevention and management, discusses techniques to keep patients moving that maintain the safety of patients and staff, and take individual patient needs into account

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Objective: Hospital-acquired pressure ulcers (PU) have a substantial negative impact on patients and continue to impose a cost burden on hospital providers Since the incidence of fragility fracture is growing, driven by the increase in the older population, it is expected that the overall incidence of associated complications will also increase accordingly The aim of this economic evaluation was to determine whether the use of a multilayer, silicone-adhesive polyurethane foam dressing (ALLEVYN LIFE, Smith & Nephew, UK) alongside standard prevention (SP) for the prevention of PUs in older patients with hip fractures is a cost-effective strategy, compared with SP alone; Method: A decision-analytic model was constructed to determine the incremental cost and effectiveness of the foam dressing strategy from the perspectives of the Italian and US hospital systems We also performed one-way and probabilistic sensitivity analyses; Results: The foam dressing intervention was found to be cost saving and more effective than SP in both Italy and the US Switching to foam dressing and standard prevention would result in an expected cost saving of €733 per patient in Italy and $840 per patient in the US, reducing the per-patient cost of treating PUs by 37-69% and 36-68%, respectively The one-way and probabilistic sensitivity analyses demonstrate that the strategy remains dominant over a range of values of the input variables; Conclusion: The foam dressing intervention is likely to be a cost-effective strategy compared with standard prevention alone;

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The article discusses the first international consensus statement on device-related pressure ulcers (DRPU) and the biomechanical reasons for the risks they represent, with topics covered such as requirements that will make medical technologies effective in DRPU prevention, extension in the definition of a medical device by the National Pressure Injury Advisory Panel, and susceptibility of paediatric patients to DRPU

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The objective of this article is to explain the biophysical principles underlying the design of the subepidermal moisture (SEM) scanner, commercially known as the ‘SEM scanner’ We also describe the mode of operation of the SEM scanner in monitoring tissue health and detecting subtle abnormal changes in tissue physiology in patients and anatomical sites at a risk of a pressure ulcer (PU: also known as a pressure injury) The technology of the SEM scanner was approved last year for sales in the US by the Food and Drug Administration (FDA) The SEM scanner detects changes in fluid contents of human skin and subdermal tissues, to a tissue depth of several millimetres, by measuring ‘capacitance’, an electrical property of the locally examined tissue site to store electric charge The capacitance of tissues, called ‘biocapacitance’, is strongly affected by the amount of fluid (water) in the tissue When the first cells die in a forming PU, inflammatory signalling causes the permeability of blood vessel walls to increase and oedema to develop Simply, the scanner detects the early appearance of oedema, which is called 'micro-oedema' Calculation of a 'SEM-delta' value, which compares biocapacitance measurements, acquired across several tissue sites, some of which are healthy and others where the PU may evolve, eliminates potential effects of systemic changes in tissue fluid contents and provides a consistent quantitative measure of the tissue health conditions at the monitored anatomical site Here, we describe SEM scanner technology, how it operates and has been laboratory tested (in computer simulations, in silico) before commercial launch We explain why targeting the physical biomarker of oedema leads to the documented success of the SEM scanner in the multiple published clinical trials, proving its ability to early detect PUs that form under intact skin

Objectives: Identifying factors associated with the occurrence of pressure injuries (PI) during acute care and with longer length of stay (LOS), focusing on modifiable factors that can be addressed and optimized by the acute rehabilitation team Design: Prospective cohort study Setting: A single Level-1 trauma center specialized in SCI care Participants: A cohort of 301 patients with acute TSCI was studied Outcome measures: The primary outcome was the occurrence of PI during acute care stay The secondary outcome was acute care LOS Bivariate and multivariate logistic or linear regression analyses were performed to determine the association between non-modifiable factors and outcomes (PI of any stage and acute LOS), whereas bivariate and hierarchical multivariate logistic or linear regression analyses were used for modifiable factors Results: When controlling for the level and severity of the TSCI, the occurrence of pneumonia (OR 2.1, CI 1.1-4.1) was significantly associated with the occurrence of PI When controlling for the level and severity of the TSCI, the occurrence of medical complications (PI, urinary tract infection and pneumonia) and lesser daily therapy resulted in significantly longer acute care LOS (P < 0.001) Conclusions: Prevention of PI occurrence and the optimization of the acute care LOS represent crucial challenges of the acute rehabilitation team, as they are significantly associated with higher functional outcomes Patients who develop pneumonia may benefit from more aggressive prevention strategies to reduce PI occurrence Systematic protocols for the prevention of complications as well as greater volume of therapy interventions should be considered to optimize the acute care LOS;
Pressure ulcers lead to discomfort for patients and may have an important impact on a patient's quality of life. Measure the incidence and prevalence of pressure ulcers in a Hospice environment; evaluate the risk factors associated with pressure ulcers; and calculate the incidence of Kennedy Terminal Pressure Ulcers. This multicentre prospective cohort study enrolled 440 cancer patients in advanced phase, consecutively admitted to five hospices of the AUSL della Romagna (Italy), during a period of 1 year. Five hundred more patients were excluded from the study because of inability to sign the consent form or refusal to participate. All patients were adults above 18 years of age. The National Pressure Advisory Panel Classification System was used to evaluate the pressure ulcers. Potential risk predictors were evaluated through the Braden Scale, the Numerical Scale, and the Pain Assessment in Advanced Dementia Scale. Starting in September 2016, 214 (48.6%) females and 226 (51.4%) males were analysed. The incidence of pressure ulcers in the total population was 17.3%. The risk factors that influence the development of pressure ulcers were age, proximity to death, and duration of stay in Hospice. The incidence of Kennedy Terminal Pressure Ulcers was 27%. This study demonstrates that 17.3% of all patients admitted to a hospice setting developed a pressure ulcer. The longer the patients stay in hospice and the clinical condition deteriorates, the higher the risk of developing a pressure ulcer. © 2020 Medicalhelplines.com Inc and John Wiley & Sons Ltd
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OBJECTIVE: To compare the effectiveness of two protocols for preventing pressure injuries (PIs) in Chinese hospitals. DESIGN AND SETTING: A multicenter, open-label, comparative study conducted in seven Chinese acute care hospitals. PATIENTS AND INTERVENTION: In total, 1,654 eligible patients were identified, and 1,204 were enrolled in the study. Enrolled patients were randomly assigned into the trial group (4-hour repositioning combined with a viscoelastic foam mattress; n = 602) or the control group (2-hour repositioning combined with a powered air pressure redistribution mattress; n = 602) Participants received their respective protocols until they were discharged, died, or for at least 7 days. MAIN OUTCOME MEASURES: The incidence of PIs, Braden Scale scores, and the time to development of PIs.
MAIN RESULTS: Ultimately, 596 trial group patients and 598 control group patients were analysed. Thirteen patients had single new stage 2 or worse PIs. The total incidence of PIs was 11%. The difference between the two groups was significant (0.3% vs 18%). However, the difference between the groups' Braden Scale score median during the intervention was not significant (13 vs 135). CONCLUSIONS: The 4-hour repositioning interval combined with a viscoelastic foam mattress did not increase PI incidence or risk. These findings could help providers select the right pressure redistribution mattresses and repositioning intervals for critical care patients.
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This retrospective study compared the presence and severity of pressure ulcers in long-term care residents with dementia based on Mini Nutritional Assessment (MNA) scores. Participants included 50 older adults with pressure ulcers and 50 matched controls. MNA scores for subjects with and without ulcers were significantly different (834 ± 267 vs 998 ± 232, P = 0.001). Scores based on ulcer stage did not follow a linear pattern; however, subjects with stage 4 ulcers had significantly lower scores (833 ± 255) than subjects with stages 1 to 3 ulcers (890 ± 270, P = 0.009; 964 ± 216, P = 0.001; and 908 ± 202, P = 0.004, respectively). Results show a relationship between low MNA scores and pressure ulcers. Thus, MNA has the potential for use in implementation of preventive measures and mitigation of ulcer progression.
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Introduction and Aim: Prevention of pressure injuries in patients hospitalized in intensive care units is significantly important. Therefore, in the present study, the effect of using olive oil and fish oil prophylactic dressings on the development of heel pressure injuries was investigated. Methods: The present study was a clinical trial conducted in the intensive care unit of Shahid Beheshti Hospital, in Yasuj. Fifty patients, who were at
moderate to high risk of pressure injuries development, were randomly divided into two groups based on the mean score of the Braden scale. In one group, patients' heels were dressed using olive oil prophylactic dressing, and in the other group, patients' heels were dressed using fish oil prophylactic dressing. The dressings were changed 3 times a day. Collected data were then analyzed using SPSS v16. Results: No significant difference was determined in demographic variables among the two groups (p<0.05). In terms of the development of heel pressure injuries, none of the patients in the olive oil and fish oil groups had pressure injuries; Conclusion: There were no statistically significant differences in either treatment group related to heel pressure injuries outcomes during the 7 days observed in the study. Additionally, both dressings had the same effects. Further studies are recommended in this regard; © 2020 Karimi et al.

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Background: Pressure ulcers can cause disability, which can lead to a default in patients' safety and results in frequent complications for patients; Objectives: This study aimed to determine the effect of educational intervention on nurses' knowledge and attitude in preventing pressure ulcers; Methods: In this study, 67 nurses of ICU wards at Ilam University of Medical Sciences were randomly assigned into the experimental or control group. Data collection tools included the questionnaires of demographic characteristics, Pieper Pressure Ulcer Knowledge test (PUKT) and Attitude toward Pressure Ulcer tool (APuP). In the experimental group, the nurses were allocated into groups of 4-5 persons and for each group 4 face-to-face training sessions and 2 virtual training sessions by means of educational videos on bed sores were performed. Gathered data were analyzed using SPSS software version 16, and descriptive and analytical tests were performed; Results: PUKT questionnaire score in the experimental group improved from 1568 (342) to 2975 (1233) (P < 0.000), while in the control group it was 1640 (313) and 1754 (662) before intervention, which was not significant (P > 0.05). Furthermore, the APuP questionnaire score in the experimental group improved from 2712 (213) to 3937 (321) (P < 0.000), while in the control group it was 2765 (171) and 2837 (500) before intervention, which was not significant (P > 0.05); Conclusions: Since educational intervention improved the knowledge and attitude of nurses in preventing pressure ulcers, it is required to conduct appropriate educational interventions to improve their knowledge and attitude; © 2020 Karimi et al.

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Introduction: As one of the main members of the health team, nurses have an important role in pressure ulcer prevention in health care centers. The aim of this study was to investigate knowledge, attitude, and practice of nurses on the prevention of pressure ulcers and their related factors; Methods: This cross-sectional study was carried out in 2018. The total number of ICU nurses employed in educational-health centers affiliated to Iran University of Medical Sciences were examined. Among a total of 328 nurses, 308 questionnaires were completed by the participants. Pressure Ulcer Knowledge Questionnaire, Attitude Toward Pressure Ulcer, and Practice of Pressure Ulcer Prevention questionnaires were used to collect data. SPSS software version 16 and independent t-test, Chi-square, Fisher exact, one-way Analysis of variance, and multiple linear regressions tests were used for data analysis; Findings: Based on the mean score of knowledge, attitude, and practice of the nurses about the pressure ulcer prevention were 6347 ± 1031, 3910 ± 4022, and 3203 ± 617, respectively. There was a positive and significant relationship between these three variables. Findings revealed that knowledge was increased by 0.05 units, with a one-year increase in work experience of nurses in the ICU. Moreover, women's knowledge and their attitude were higher than those of men as 3132 and 165 units, respectively. Based on the findings, attitude of nurses increased by 0.43 units for an hour of extra work per week. Nurses' attitude score in the General ICU and their practice were higher than scores of other nurses as 2144 and 2574 units, respectively. Moreover, practice of nurses increased by 0.162 unit with one-year increase of their age; Conclusion: Given the undesirable level of knowledge and attitude and relatively desirable practice of nurses in the field of pressure ulcer prevention and the importance of improving the safety of patients admitted to the ICU, it is suggested that appropriate educational planning be developed to raise the level of knowledge, attitude, and practice of health care providers, especially nurses, in the area of pressure ulcer prevention; © 2020 Tissue Viability Society Published by Elsevier Ltd. All rights reserved.

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The development of pressure ulcers is associated with four different pathways: ischemia, ischemia-reperfusion injury, impaired interstitial fluid flow and lymphatic drainage, and cell deformation. For prediction of pressure ulcer development, it is important to detect the tissue response involved in the pathways at the molecular level. However, non-invasive techniques for detecting this tissue response are not available. This study aimed to demonstrate that the secretion of the candidate marker proteins in pressure-loaded mouse skin can be detected by skin blotting, and to propose a novel direct skin assessment method for predicting pressure ulcer development. We created three different tissue damage models: early stage pressure ulcers, blanchable erythema and intact skin. We confirmed the pathways involved in the pressure ulcer development by histological analyses in the pressure ulcer model. Interleukin-1α (IL-1α), vascular endothelial growth factor C (VEGF-C) and heat shock protein 90α (HSP90α) were expressed in the pressure ulcer model at a significantly different level compared to the blanchable erythema or intact skin. During the course of detecting the secretion of these novel biomarkers by skin blotting, it can be a useful method for non-invasive prediction of pressure ulcer development. Secretion of the candidate marker proteins in pressure-loaded mouse skin can be detected by skin blotting for predicting pressure ulcer development. Three different tissue damage models were used: early stage pressure ulcers, blanchable erythema and intact skin. IL-1α, VEGF-C and HSP90α may be useful biomarkers for predicting pressure ulcer development.


- Turkish NSs had a positive attitude scores but inadequate knowledge scores towards preventing PUs
- A positive correlation was found between the NSs' knowledge levels and attitude scores
- A more positive attitude may be developed in NSs when the gaps in their knowledge are filled


Objectives: To explore the prevalence, location, and clinical factors associated with hospital-acquired pressure injuries among pediatric patients with congenital heart disease.

Design: Secondary analysis of data from a multicenter prospective cohort study of pediatric pressure injury risk, including patients with congenital heart disease.

Setting: Eight acute care academic pediatric hospitals.

Patients: Patients were preterm to 21 years old with congenital heart disease and on bed rest for at least 24 hours after hospital admission with a medical device attached to or traversing the skin or mucous membrane.

Interventions: None.

Measurements and Main Results: Patients were evaluated for a maximum of eight observations during a 4-week period to identify Braden QD risk and pressure injury development. Hospital-acquired pressure injuries were staged according to the National Pressure Ulcer Advisory Panel guidelines.

Stepwise logistic regression was used to explore risk factors associated with hospital-acquired pressure injuries development, accounting for site as a cluster variable using generalized estimating equations. Overall, 279 pediatric cardiac patients provided 919 observations (median, 2 per patient [interquartile range, 2-5 per patient]). Thirty-eight hospital-acquired pressure injuries occurred in 27 patients (97%). Most injuries (28/38 [74%]) were related to medical devices. The most common medical devices that caused injury were oxygen saturation probes. The remaining hospital-acquired pressure injuries were immobility-related pressure injuries (10/38 [26%]).

In multivariable analyses, being non-Hispanic white (odds ratio, 354; 95% CI, 215-584), experiencing operating room time greater than 4 hours (odds ratio, 291; 95% CI, 113-749), having oxygen saturation levels less than 85% (odds ratio, 265; 95% CI, 101-696), and having worse Braden QD scores (odds ratio, 125 per 1 point increase; 95% CI, 117-134) were significantly associated with hospital-acquired pressure injuries development.

Conclusions: In this multicenter observational study of pediatric patients with congenital heart disease, we describe a hospital-acquired pressure injury prevalence of 97% with approximately 75% of injuries related to medical devices.
These data can be used to inform practice and target interventions to decrease pressure injury risk and prevent pressure injuries in this vulnerable pediatric population


Introduction: The development of medical device-related pressure ulcers (MDR PUs) as a result of an endotracheal tube fixator (ETTF) use affects patients particularly in the intensive care unit (ICU); Study Design and Data Collection: Prospective comparative study followed two similar groups of ventilated ICU patients: Group A treated with cloth tape ETTF (CT-ETTF) and Group B treated with Anchorfast Hollister-ETTF (AH-ETTF) Data were collected regarding PU development, location, grade, time from intubation and hospitalisation; Results: Significant differences in PU development (p < 001), hospital LOS until PU development (p < 001), and ventilation days until PU development (p < 001) were found between the two groups all in favour of Group B Linear regression conducted to identify the primary reason for these findings, revealed that the key factor responsible for more than 40% of the difference in ventilation days until ETTF MDR PU formation between the groups was the usage of AH-ETTF (R2 0436, p 0000); Conclusions: There was a significant advantage to AH-ETTF over CT-ETTF in pressure ulcer development This should be taken into consideration when deciding which ETTF type to use; Copyright © 2020 Elsevier Ltd All rights reserved


Pressure injuries are potentially preventable but frequently occurring adverse events Intensive care patients have major risk factors for pressure injury with a reported pressure injury prevalence of 12–33% Multi-faceted interventions, also known as programs or care bundles, are recommended to prevent pressure injuries This systematic review evaluated the effectiveness of pressure injury prevention programs in reducing pressure injury prevalence and incidence in the adult intensive care population It also critically appraised the program components and strategies used to implement these programs We searched PubMed, EMBASE (embasecom), Ovid MEDLINE, EBSCOhost CINAHL, and Cochrane Library databases separately for papers published in English and Chinese from the year of 2000 to May 2018 After removing duplicates, two authors independently screened the title and abstracts, then full-text against the inclusion and exclusion criteria Data was extracted by one author and checked by a second author Quality appraisal was conducted by two authors by using the Quality Improvement Minimum Quality Criteria Set, and the Mixed Methods Appraisal Tool Content analysis was used to categorise program components Implementation strategies were grouped into six classifications: dissemination strategies, implementation process strategies, integration strategies, capacity building strategies, sustainability strategies, and scale up strategies Twenty-one peer reviewed papers (12 quality improvement projects, and 9 research papers from 8 studies) were included Pressure injury prevention programs with 2–11 components were commonly implemented Common components of the programs included: clarification of staff roles, introducing new roles, repositioning, staff and patient education, support surfaces use, pressure injury risk assessment, skin assessment, nutrition needs assessment, documentation, multidisciplinary team involvement, and mobilisation Implementation strategies commonly used were education, audit and feedback, and standardising documentation Five of the eight research studies and one of the quality improvement projects reported significant decrease in pressure injury prevalence, and/or increase in compliance to pressure injury prevention protocols and strategies Two quality improvement papers reported cost savings of $1 million and £26 million respectively after the implementation of the programs Much of the work on multicomponent pressure injury prevention programs has been undertaken as quality improvement projects and before and after research studies with limited rigour However, positive outcomes and strong theoretical rationales for the components in the programs suggest that they are beneficial This calls for future high-quality research such as randomised controlled trials to test the effectiveness of multicomponent interventions and their implementation strategies Tweetable abstract : Some multicomponent pressure injury prevention programs were found to be effective; however, higher level of research evidence is needed

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Our aim in this study was to examine which factors are associated with post-operative complications after surgery for pressure ulcers in individuals with spinal cord injury We performed a retrospective cohort study including all spinal cord injured patients undergoing pressure ulcer surgery in our department between 2002 and 2019 Patient demographics and comorbidity were collected from medical records, as were treatment data and information on post-operative complications within 30 days Assessment of outcomes was performed through t-tests, χ²-tests and ANOVA Out of 118 operations, 51 (43%) had a post-operative complication of any kind The vast majority (44 cases, 86% of all complications) had minor complications (Clavien-Dindo grade I or II) Seven patients (6%) had a complication of Clavien-Dindo grade III or higher, requiring return to theatre or ICU care We found that a higher age, a low serum albumin (<35 g/dl), and over or underweight, were associated with an increased risk of complications (p < 0.05) Out of 143 treated ulcers, 132 were evaluated at a follow-up visit one to two months after surgery, and 99 of these (75%) were healed Surgery of pressure ulcers in patients with spinal cord injury is not a low-risk venture, however, few patients will suffer serious post-operative complications A majority of treated ulcers will heal shortly post-operatively A number of risk factors are associated with post-operative complications, which can be of help to guide patient selection in the future;

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Lustig, M, N Wiggermann, et al (2020) "How patient migration in bed affects the sacral soft tissue loading and thereby the risk for a hospital-acquired pressure injury" International Wound Journal Head-of-bed (HOB) elevation is a common clinical practice in hospitals causing the patient's body to slide down in bed because of gravity This migration effect likely results in tissue shearing between the sacrum and the support surface, which increases the risk for pressure injuries StayInPlace (HillRom Inc) is a commercial migration-reduction technology (MRT) incorporated in intensive care bedframes Yet, the effects of migration-reduction on tissue shear stresses during HOB elevation are unknown We analysed relationships between migration and resulting sacral soft tissue stresses by combining motion analysis and three-dimensional finite element modelling of the buttocks Migration data were collected for 10 subjects, lying supine on two bedframe types with and without MRT, and at HOB elevations of 45°/65° Migration data were used as displacement boundary conditions for the modelling to calculate tissue stress exposures Migration values for the conventional bed were 175- and 16-times greater than those for the migration-reduction bed, for elevations of 45° and 65°, respectively (P < 0.01) The modelling showed that the farther the migration, the greater the tissue stress exposures Internal stresses were 18-fold greater than respective skin stresses Our results, based on the novel integrated experimental-computational method, point to clear biomechanical benefits in minimising migration using MRT; © 2020 Medicalhelplinescom Inc and John Wiley & Sons Ltd

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Background: A quality improvement initiative was designed to identify patients at risk of compromised tissue viability before they were admitted to hospital Paramedics were educated to better identify patients with pressure ulcers or pressure damage, or those at risk of compromised tissue viability, and these patients were fitted with a pressure ulcer alert bracelet so that emergency department staff could identify them Aims: The aims of the current initiative were to educate paramedics to better identify patients with pressure ulcers or those at risk of compromised tissue viability to emergency department staff, and fit them with a pressure ulcer alert bracelet to highlight them to emergency department staff so they would receive prompt intervention Methods: A plan, do, study, act improvement methodology was used, and data from a 3-month period were retrospectively analysed Patients identified as being at risk of compromised tissue viability were flagged as requiring assessment via a pressure ulcer risk assessment tool to enable prevention Results: Paramedics identified 130 at-risk patients (aged 23–100 years), and data from 127 patients were analysed Most at-risk patients fitted with pressure ulcer alert bracelets were aged 70 years or over, and there was an even female/male division More than half (53%) of patients were found to have a pressure ulcer and alerted to emergency department staff More than one in four (27%) patients who were identified as being at risk of pressure ulcers lived in nursing or residential homes, and 43% lived alone or in warden-controlled accommodation Conclusions: Paramedics effectively identified potential risk factors for pressure ulcer development, indicating a need for immediate intervention This study gives insight into how pressure
ulcer risk assessment using an alert bracelet may be used in paramedic practice in emergency department handovers. Success depends on hospital staff acting upon paramedic recommendation.


Though preventable in most cases, pressure ulcers continue to pose a major burden to the individual and society, affecting ≤3 million adults annually in the United States alone. Despite increased national attention over the past 20 years, the prevalence of pressure ulcers has largely remained unchanged, while the associated costs of care continue to increase. Dermatologists can play a significant role in pressure ulcer prevention by becoming aware of at-risk populations and implementing suitable preventive strategies. Moreover, dermatologists should be able to recognize early changes that occur before skin breakdown and to properly identify and stage pressure ulcers to prevent delay of appropriate care. The aim of the first article in this continuing medical education series is to discuss the pathophysiology, risk factors, epidemiology, social and economic burdens, and clinical presentation of pressure ulcers.


This study developed a measuring instrument of pressure-injury risk assessment competence for nursing education adopting theoretical procedures based on competence structuration to support the psychometric quality. The objective of this study is testing the psychometric properties of the instrument using simulation strategy and to determine the instrument's standardisation and normalisation. A methodological study was designed. The instrument was developed by a content-validated theoretical construct administered to 155 undergraduate nursing students from universities in the northeast and south of Brazil using simulation. The instrument was applied over three phases: before the lecture on pressure-injury risk assessment competence, after scenario of simulation experience, and after debriefing experience. The instrument comprised 32 items. The factorial analysis found that three domains explained 64.6% and 62.18% of the total variance in post-scenario and debriefing cases. The perfect and very high discrimination index of the instrument indicated minimal differences in measured latent trait levels. It also found that reliability was excellent (0.973 and 0.967). Moreover, an equation applicable to instruments using study's theoretical procedure was proposed. The instrument was found to be a valid, accurate, and reliable educational tool for pressure-injury risk assessment competence; © 2020 Medicalhelplinescom Inc and John Wiley & Sons Ltd


General Purpose: To review the nutrition-related recommendations presented in the 2019 European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel, and Pan Pacific Pressure Injury Alliance Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice Guideline with further discussion of nutrition for pressure injury management in the context of the recommendations; Target Audience: This continuing education activity is intended for physicians, physician assistants, nurse practitioners, and...
nurses with an interest in skin and wound care; Learning Objectives/outcomes: After participating in this educational activity, the participant should be better able to:1 Distinguish nutrition and malnutrition, especially as they relate to the development and healing of pressure injuries2 Differentiate the tools and techniques that help clinicians assess nutrition status as well as the causes of pressure injuries in specific populations3 Identify interventions for improving nutrition status and promoting pressure injury healing; Abstract: Macro- and micronutrients are required by each organ system in specific amounts to promote the growth, development, maintenance, and repair of body tissues. Specifically, nutrition plays an important role in the prevention and treatment of pressure injuries. The purpose of this manuscript is to review the nutrition-related recommendations presented in the 2019 European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel, and Pan Pacific Pressure Injury Alliance Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice Guideline. Nutrition for pressure injury management is discussed in the context of the recommendations.

Objective: To conduct a meta-analysis of the literature on training programs that aimed to improve nurses' pressure injury management skills; Methods: Literature searches were conducted using Ovid-MEDLINE, Cochrane Library, CINAHL, and Korean databases. The search terms used were: (nurse* AND ((pressure OR decubitus) AND (ulcer* OR injur*)) OR bed sore OR bedsore OR decubitus) AND (program* OR training)) Random-effects models were used to calculate the standardized mean difference and odds ratios, with 95% confidence intervals (CIs) to analyze the effects; Main Results: Initial searches yielded 1,067 studies. Of these, 23 met the selection criteria. Nurses' knowledge (standard mean difference, 123; 95% CI, 0.50-1.96; P < 0.01), visual discrimination ability (standard mean difference, 113; 95% CI, 0.88-1.38; P < 0.01), and clinical judgment (odds ratio, 152; 95% CI, 1.46-1.57; P < 0.01) improved after the programs; Conclusions: Pressure injury training programs can improve nurses' competency. The results from this study indicate that such programs may help improve nurses' knowledge, visual discrimination ability, and clinical judgment and can be considered continuing education programs. However, large-scale studies are needed to confirm this conclusion.


Sayan, H E, N K Girgin, et al (2020) "Prevalence of pressure ulcers in hospitalized adult patients in Bursa, Turkey: A multicentre, point prevalence study" Journal Of Evaluation In Clinical Practice Rationale, Aims, and Objectives: Pressure ulcers (PUs), which are preventable complications, increase the cost of health care and the risk of prolonged hospital stay, as well as morbidity and mortality. In this study, we aimed to describe the prevalence, clinical features, and risk factors for PUs among hospitalized patients; Method: This study was cross-sectional and conducted over a single day in all the care units. Data were recorded on a patient observation form that included demographic data, diagnosis of admission to the hospital or intensive care unit (ICU), comorbidity and chronic diseases, location, stage of PU, and Braden Scale score. Acute physiology and chronic health evaluation (APACHE) II score, Glasgow coma score (GCS), PaO2/FiO2 ratio, and albumin level were recorded for ICU patients; Results: A total of 1548 adult patients participated in the study. Of these patients, 177 (11.43%) had PU. The patients with PU had more advanced age, lower body mass index (BMI), and longer duration of hospital and ICU stay (for all P < 0.001). Evaluation of PU in the first 24 hours after hospital admission and the last PU evaluation time also showed a significant effect (both P < 0.001). Braden Scale score less than or equal to 13 in the first evaluation after hospital admission increased the risk of PU. Albumin was 2.7 ± 0.57 g/m/dL in ICU patients, and albumin level was significantly lower in patients with PU (P < 0.001). PUs were located mainly in the sacrum (47.59%). The stages of PU were classified as: stage II (4.276%) for all patients; Conclusions: The prevalence of PU is related to the age and severity of patient clinical status, as predicted by the Braden Scale score and APACHE II score, and length of hospital and ICU stay. Low albumin level is also related to development of PUs in ICU patients; © 2020 John Wiley & Sons, Ltd

**Background:** Hospital-acquired pressure injuries strain organizational resources and negatively impact the quality of life of affected patients. However, early detection of pressure injuries is limited due to challenges with visual assessment, particularly in individuals with dark skin.

**Purpose:** The purpose of this systematic review was to determine whether sufficient research evidence exists to support the use of bedside technologies for early detection of pressure injuries, which is inclusive of pressure-related blanchable erythema (PrBE), pressure-related nonblanchable erythema (PrNBE), and deep tissue pressure injury (DTPI).

**Search Question:** What available bedside technologies enhance the early detection of pressure injuries?

**Methods:** A systematic search of Medline, CINAHL, Web of Science, and Cochrane databases was executed. Quantitative studies were included that examined whether accessible technologies could indicate the presence of PrBE, PrNBE, and DTPI. The quality of the research was evaluated using the Johns Hopkins Nursing Evidence-Based Practice Rating Scale.

**Findings:** We identified 18 eligible studies that represented a variety of technologies, including ultrasound (n = 5), thermography (n = 7), subepidermal moisture (SEM) measurement (n = 5), reflectance spectrometry (n = 2), and laser Doppler (n = 1). The methodological rigor in study quality was variable.

**Conclusions:** Objective methods that provide accurate and timely assessment of DTPIs augment early implementation of optimal prevention and treatment measures. Evidence identified in this systematic review supports the use of SEM measurement devices as effective tools for early pressure injury detection. However, more research in the field of technology-enhanced, pressure injury detection is needed to support the use of existing and emerging devices.

**Check for full text**

Sibbald, R G and E A Ayello (2020) "Terminal Ulcers, SCALE, Skin Failure, and Unavoidable Pressure Injuries: Results of the 2019 Terminology Survey" Advances In Skin & Wound Care 33(3): 137-145

**General Purpose:** To present the results of the 2019 study of healthcare professionals' consensus and opinions regarding terminology for terminal ulcers, Skin Changes At Life's End, skin failure, and unavoidable pressure injuries to improve clinical care and to foster research into current criteria for unavoidable skin changes at the end of life.

**Target Audience:** This continuing education activity is intended for physicians, physician assistants, NPs, and nurses with an interest in skin and wound care.

**Objectives/outcomes:** After completing this continuing education activity, the participant should be better able to: 1. Explain the survey methodology and identify the consensus statements. 2. Synthesize the open-ended questions and respondent comments and their implications for clinical care and research.

**Abstract:** This article reports the results of a global wound care community survey on Kennedy terminal ulcers, Skin Changes At Life's End, Trombley-Brennan terminal tissue injuries, skin failure, and unavoidable pressure injury terminology. The survey consisted of 10 respondent-ranked statements to determine their level of agreement. There were 505 respondents documented. Each statement required 80% of respondents to agree (either "strongly agree" or "somewhat agree") for the statement to reach consensus. Nine of the 10 statements reached consensus. Comments from two additional open-ended questions were grouped by theme. Conclusions and suggested recommendations for next steps are discussed. This summary is designed to improve clinical care and foster research into current criteria for unavoidable skin changes at the end of life.

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**Introduction:** Trochanteric pressure ulcers (PrUs) are difficult to treat and are often complicated by infection spreading to the hip joint. We review three cases from India where proximal femoral resection and pedicled Tensor Fascia Lata (TFL) flapping was used in the management of infected deep trochanteric ulcers communicating to the hip joint.

**Case Presentation:** Three patients had a total of four trochanteric PrUs communicating to the hip joint. Proximal femoral resection along with radical debridement of the pressure ulcer (PrU) was the first step in our surgical protocol. Serial debridements were performed to make the resulting cavity healthier and ready for the subsequent flap surgery. TFL flapping was done to cover the raw area of the PrU and the donor site was closed either primarily or with a split skin graft. All patients were males with AIS A spinal cord injury (SCI) and stage 4 PrUs in the trochanteric region. One patient had bilateral trochanteric ulcers. There was complete healing of all PrUs with improvement in wheelchair
mobility, and general health; Discussion: PrUs are a common complication of patients with SCI and are often considered one of the most neglected issues of health care delivery in India Proximal femoral resection with pedicled TFL muscle flap is a versatile and reliable procedure for the coverage of recalcitrant trochanteric PrU with hip joint involvement Minimal donor site morbidity occurs;

Objective: To assess pressure ulcer (PU) risk in persons with mobility impairments using a large data set to identify demographic, laboratory, hemodynamic, and pharmacologic risk factors; Methods: The cohort of interest was persons with disabilities who have mobility impairments and are diagnostically at risk of PUs To define this cohort, diagnoses that qualify patients for skin protection wheelchair cushions were used Data were obtained from the Cerner Health Facts data warehouse Two cohorts were defined: persons with and without a history of PUs Analysis included descriptive statistics and multivariate logistic regression modeling Variables retained in the model were identified using LASSO, gradient boosting, and Bayesian model averaging; Main Results: The resulting cohorts included more than 87,000 persons with a history of PUs and more than 11 million persons who did not have a PU The data revealed seven disability groups with the greatest prevalence of PUs: those with Alzheimer disease, cerebral palsy, hemiplegia, multiple sclerosis, paraplegia/quadruplegia, Parkinson disease, and spina bifida Ulcers in the pelvic region accounted for 82% of PUs Persons with disabilities who were male or black had a greater prevalence of PUs Physiologic risk factors included the presence of kidney or renal disease, decreased serum albumin, and increased serum C-reactive protein; Conclusions: The results indicate that, although persons with disabilities can exhibit a wide functional range, they remain at risk of PUs and should be evaluated for proper preventive measures, including support surfaces and wheelchair cushions;


Team, V, M Tuck, et al (2020) "Pressure injury data in Australian acute care settings: A comparison of three data sets” International Wound JournalHospital-acquired pressure injuries (HAPIs) represent a serious clinical and economic problem The cost of treating HAPIs in Australian public hospitals was recently reported at AUS$983 million per annum There are three main sources of data for documenting pressure injury (PI) occurrence in Australian hospitals: incident reporting, medical record coded data, and real-time surveys of pressure injury PI data reported at hospital level and to external agencies using these three different sources are variable This reporting issue leads to inaccurate data interpretation and hinders improvement in accuracy of PI identification and PI prevention This study involved a comparison of the three different data sources in selected Australian hospitals, to improve the accuracy and comparability of data Findings from this study provide benchmark areas for improvement in PI documenting and reporting Better understanding the agreement between the three data sets could lead to a more efficient and effective sharing of data sources; © 2020 Medicalhelplinescom Inc and John Wiley & Sons Ltd

Weintraub, S J and S X Chen (2020) "A potential widespread and important role for sleep-disordered breathing in pressure injury development and delayed healing among those with spinal cord injury” Spinal CordSoft tissue pressure injuries commonly occur in those with spinal cord injury They add an immeasurable medical, emotional, and social burden to those who suffer a spinal cord injury and ultimately can cause death due to sepsis when they ulcerate and become infected Hence it is notable that (i) obstructive sleep apnea and other forms of sleep-disordered breathing are highly prevalent among those with spinal cord injury; (ii) several of the pathophysiologic consequences of sleep-disordered breathing, including hypoxemia, ischemia, oxidative stress, and endothelial dysfunction, would be expected to increase susceptibility to pressure injuries, worsen their severity, and slow or prevent their healing; and (iii) there is emerging clinical evidence that sleep-disordered breathing can have a significant role in the pathogenesis of other types of chronic wounds and that treatment of sleep-disordered
breathing can aid in the healing of these wounds. These findings raise the possibility that sleep-disordered breathing may have a widespread and important role in the development, severity, and persistence of pressure injuries in those with spinal cord injury and that treatment of sleep-disordered breathing may be an effective adjunct in their prevention and healing. Studies to determine if there is a functional relationship between sleep-disordered breathing and pressure injuries in individuals with spinal cord injury are warranted.

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This study was performed as a quasi-experimental study using a standardized patient simulation program in order to explore the effects of education on the performance and knowledge of undergraduate nursing students with respect to pressure ulcer prevention. The study sample consisted of 38 students who completed the study. After the theoretical education portion, the students first knowledge and performance scores were evaluated with the standardized patient program. Demonstration education with the standardized patient and a second standardized patient practice were then performed. Afterwards, a debriefing session was held under the supervision of the researcher. After three months, the second knowledge and performance score evaluation was performed with the standardized patient. Knowledge and performance scores were compared after theoretical training and three months after simulation training. The mean score of 38 students were 4368 ± 906 and 7592 ± 1684 on the pre- and post-tests, respectively. Preliminary points were significantly lower than post-test points (p < 0.001). The median performance score was 789 (min–max: 0–7368) in the first simulation and 8684 (min–max: 6316–10000) in the second simulation. There was a statistically significant change between the two performance scores (p < 0.001). In this study, it was determined that the level of knowledge and performance persisted in the evaluations after comprehensive training using standardized patient simulations. This study confirmed standardized patient practice as an efficient learning modality for nursing students in the long-term. Little is known about the knowledge and performance of nursing students in preventing pressure ulcer. Nursing students often face pressure ulcer during clinical practice. Knowledge and performance of nursing students are increasing with standardized patient practice. There is no study on the standardized patient who uses the knowledge and performance of pressure ulcer prevention of nursing students. In this study, it has been determined that nursing students have been able to maintain their knowledge and performance levels in the long term.

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Yoshimura, M, N Ohura, et al (2020) "High body mass index is a strong predictor of intraoperative acquired pressure injury in spinal surgery patients when prophylactic film dressings are applied: A retrospective analysis prior to the BOSS Trial" International Wound Journal

We reported the efficacy of soft silicone multilayered foam dressings in preventing intraoperatively acquired pressure injuries (IAPIs) in the prone position using a Relton-Hall frame (BOSS trial). The aim of this study was to clarify the incidence and extract the risk factors for IAPIs in cases in which polyurethane film dressing was used against IAPIs before the BOSS trial period. This study conducted as a retrospective dual-center cohort study between August 2014 and June 2015 using the medical records in the operating room. The incidence of IAPIs that developed within 24 hours after surgery was 71% (7/99). The multivariate logistic regression analysis revealed that body mass index (BMI) (P = 0.016, odds ratio [OR]: 122, 95% confidence interval (CI) 108-14) and length of surgery (P < 0.001, OR 247, 95% CI 186-351) were independently associated with the development of IAPIs. Since high BMI was not extracted in BOSS trial, we conclude that the application of soft silicone multilayer foam dressings is important for preventing the development of IAPIs in patients with high BMI values; © 2020 Medicalhelplinescom Inc and John Wiley & Sons Ltd

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Study Design: Qualitative exploratory study; Objectives: Pressure injuries (PIs) are a major secondary condition occurring after spinal cord injuries (SCI). Optimization of outpatient and community care may be a promising approach to better support community-dwelling individuals with SCI in preventing PIs. The aim of this study was to examine the experiences of individuals with SCI, family caregivers and health professionals (HPs) in using or providing outpatient and community services for early treatment and prevention of PIs in SCI; Setting: Switzerland; Methods: Semi-structured interviews with a sample of Swiss residents community-dwelling individuals with SCI (n = 20), family caregivers (n = 5) and HPs (n = 22) were analysed using thematic analysis; Results: General practitioners (GPs),
home care providers, SCI-specialized outpatient clinics and an SCI-specialized nursing service are involved in the prevention and early treatment of PIs. Our findings show that the needs of individuals with SCI are not fully met: outpatient and community care is often fragmented, mono-professional and non-specialized, while persons with SCI and HPs prefer coordinated, inter-professional and specialized services for preventing and treating PIs. Our findings also highlight the challenges faced by HPs in providing care to individuals with SCI in the community.

Conclusions: Although there seems to be a gap in service provision, there is the potential for improvement by better integrating the different providers in a network and structuring their collaborations. Concrete suggestions are: systematizing knowledge transfer to home care providers and GPs; redefining the role of involved HPs and individuals with SCI and reinforcing the role of the SCI-specialized nursing service;

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Websites


“Risk Assessment and Prevention of Pressure Ulcers: a clinical practice guideline from the American College of Physicians” (2015)
http://annals.org/article.aspx?articleid=2173505


NICE Guideline: “Pressure ulcers: prevention and management of pressure ulcers” (April 2014)
http://www.nice.org.uk/guidance/CG179


The Trans Tasman Dietetic Wound Care Group, Evidence based practice guidelines for the nutritional management of adults with pressure injuries (2011)

Registered Nurses’ Association of Ontario - Risk assessment and prevention of pressure ulcers (2011 revised)

National Guideline Clearinghouse – predefined search
https://search.ahrq.gov/search?q=%22pressure+ulcer*%22+or+%22pressure+injur*%22


Cochrane Wounds Group
https://wounds.cochrane.org/news/reviews
The Cochrane Wounds Group was established in 1995 with the aim of using evidence from trials to conduct systematic reviews to establish the effectiveness of interventions for the prevention and treatment of wounds, and interventions for the prevention and treatment of wound complications.

National Pressure Injury Advisory Panel
http://www.npiap.com/
e-Journals

- **Advances in Skin & Wound Care** (Tables of Contents only)
- **Eplasty (formerly Journal of Burns & Wounds)** (full text)
- **EWMA Journal** (full text)
- **International Wound Journal** (Tables of Contents only)
- **Journal of the American College of Clinical Wound Specialists** (full text)
- **Journal of Tissue Viability** (full text)
- **Journal of Wound Care** (full text)
- **World Council of Enterostomal Therapists Journal** (full text 2010 onwards)

**World Wide Wounds**: the premier online resource for dressing materials and practical wound management information (full text)

The mission of **World Wide Wounds** is to be the premier online resource for peer-reviewed information on dressing materials providing practical guidance on all aspects of wound management to health professionals worldwide.

- **Wound Care Advisor** (full text 2014 onwards)
- **Wound Management and Prevention** (Table of Contents only)
- **Wound Practice & Research** (full text)
- **Wound Repair & Regeneration** (full text with 12-month delay)
- **Wounds International** (full text 2012 onwards)
- **Wounds UK Journal** (full text 2011 onwards)

e-Books

- **Acute and chronic wounds** 5th ed, 2016
- **Fast facts for wound care nursing: practical wound management in a nutshell** 2011
- **Nutrition and wound healing** 2007
- **Wound management: principles and practice** 3rd. ed., 2012
## Queensland Health Libraries and Contact Numbers

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